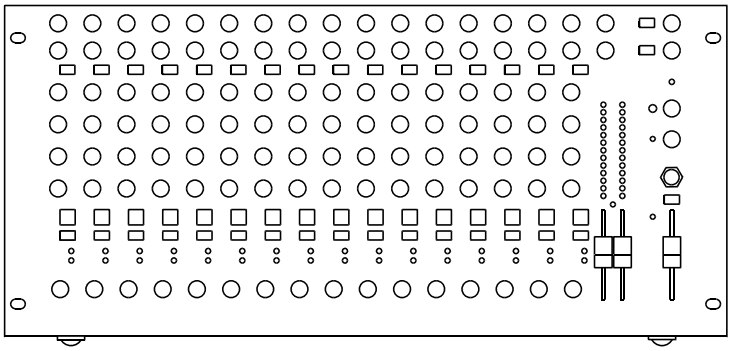
MACKIE.®

LM3204

32 INPUT, 2+2 BUS MIXER



SERVICE MANUAL

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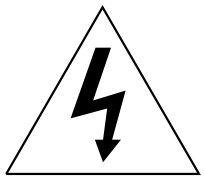
820-174-00

Page 3 is interactive

HOME

CAUTION *AVIS*

RISK OF ELECTRIC SHOCK
DO NOT OPEN
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE THE COVER (OR BACK)
NO USER SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE.

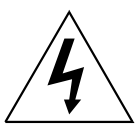
AVIS:POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE.

POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UN PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS LAISSER AUCUNE PARTIE A DECOUVERT.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION :Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio energy and, if not installed properly and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'éléctrocution.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

CONTENTS

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Disclaimer 3
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Front Board Schematics and PCB Layout 17-1
Rear Board Schematics and PCB Layout 18-1
Meter Board Schematics and PCB Layout 24-1
Power Supply Schematics and PCB Layout 25-1

INTRODUCTION

SERVICE ON THIS EQUIPMENT IS TO BE PERFORMED BY
EXPERIENCED REPAIR TECHNICIANS ONLY
CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE

This manual contains basic service information. It is essential that you have a copy of the user's manual as this contains the complete operating instructions.

TECHNICAL SUPPORT

Mackie Designs Technical Support Department is available 8AM - 5PM PST, Monday-Friday at 1-800-258-6883. Feel free to call with any questions and to speak with a carefully-calibrated technician.

DISCLAIMER

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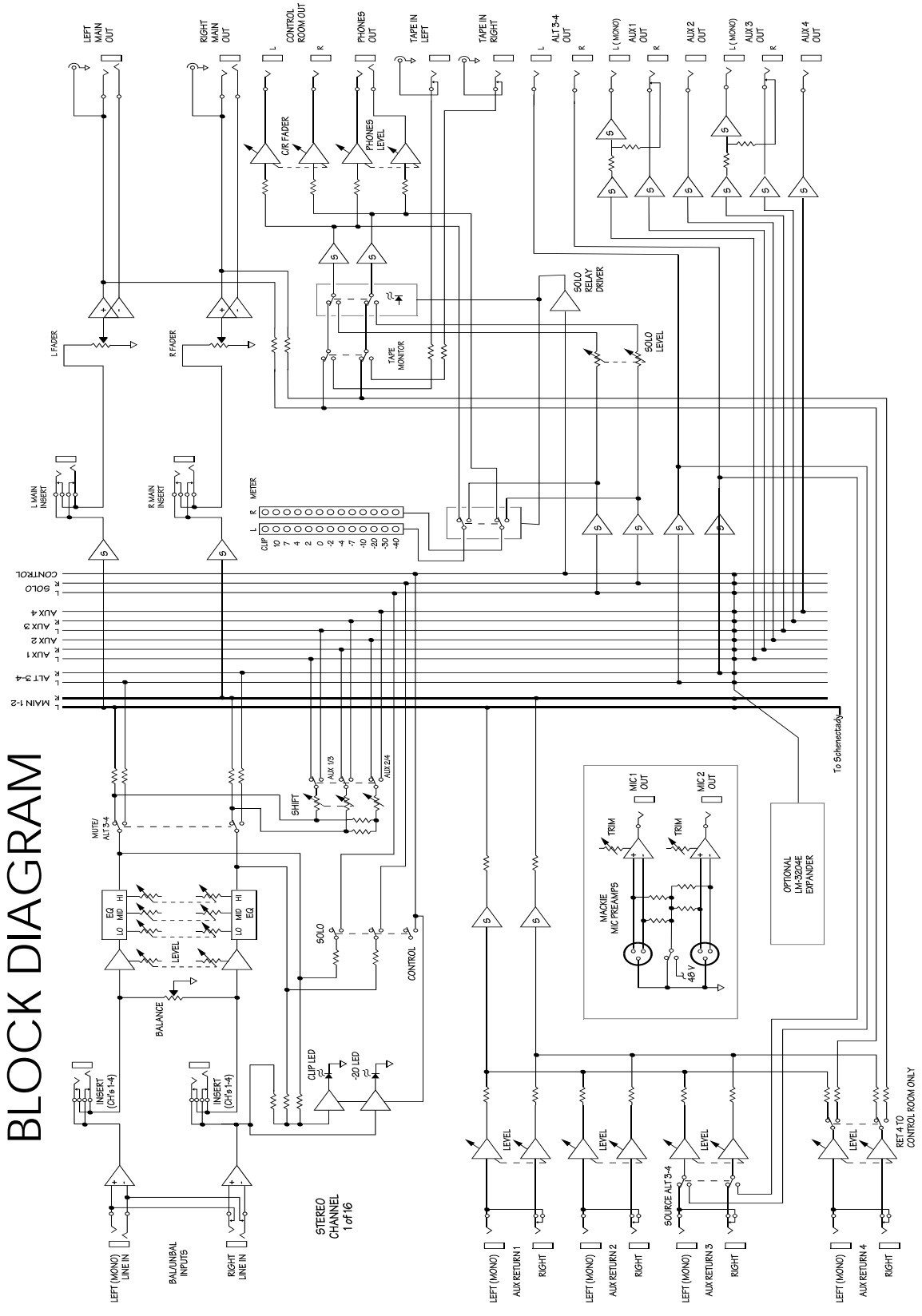
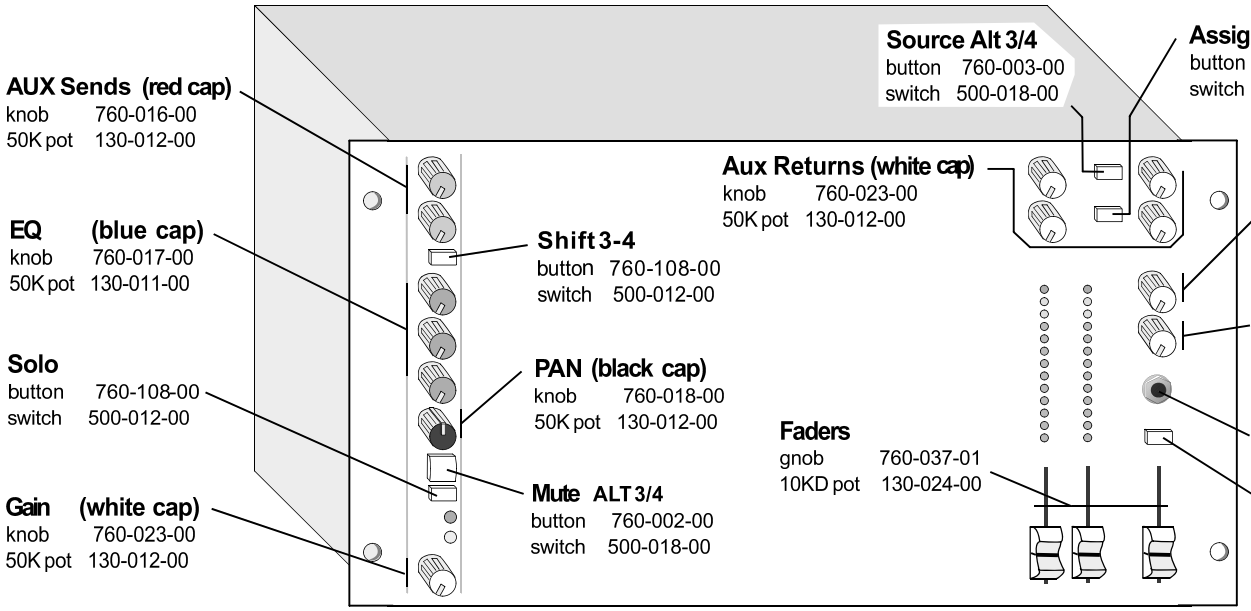
BLOCK DIAGRAM



QUICK PARTS



AUX Sends (red cap)
knob 760-016-00
50K pot 130-012-00

EQ (blue cap)
knob 760-017-00
50K pot 130-011-00

Solo
button 760-108-00
switch 500-012-00

Gain (white cap)
knob 760-023-00
50K pot 130-012-00

Shift 3-4
button 760-108-00
switch 500-012-00

PAN (black cap)
knob 760-018-00
50K pot 130-012-00

Mute ALT 3/4
button 760-002-00
switch 500-018-00

Source Alt 3/4
button 760-003-00
switch 500-018-00

Assign to Control Room
button 760-003-00
switch 500-018-00

Aux Returns (white cap)
knob 760-023-00
50K pot 130-012-00

Faders
gnob 760-037-01
10KD pot 130-024-00

Phones Gain (white cap)
knob 760-023-00
50K pot 130-012-00

Solo Gain (white cap)
knob 760-023-00
50K pot 130-012- 00

Headphone Jack

Tape/Monitor
button 760-003-00
switch 500-012-00

...More Stuff...

LEDs
Rude lite 304-002-00
Red 304-001-00
Yellow 304-003-00
Green 304-004-00

Owners Manual
820-009-00

Phantom Switch
button 760-003-00
extender 760-015-00
switch 500-018-00

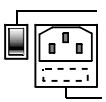
Line Cord 6' IEC
10A 640-001-00

XLR Female Jack
400-002-01

RCA Quad
400-022-00

1/4" Female Jack
jack 400-214-00
nut 705-003-00
washer 710-002- 00

Trim Control
knob 760-007-00
5KZD pot 130-020-00

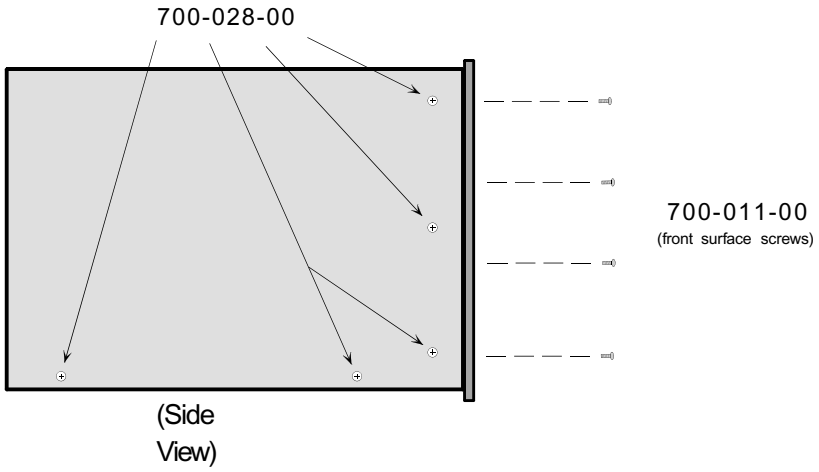


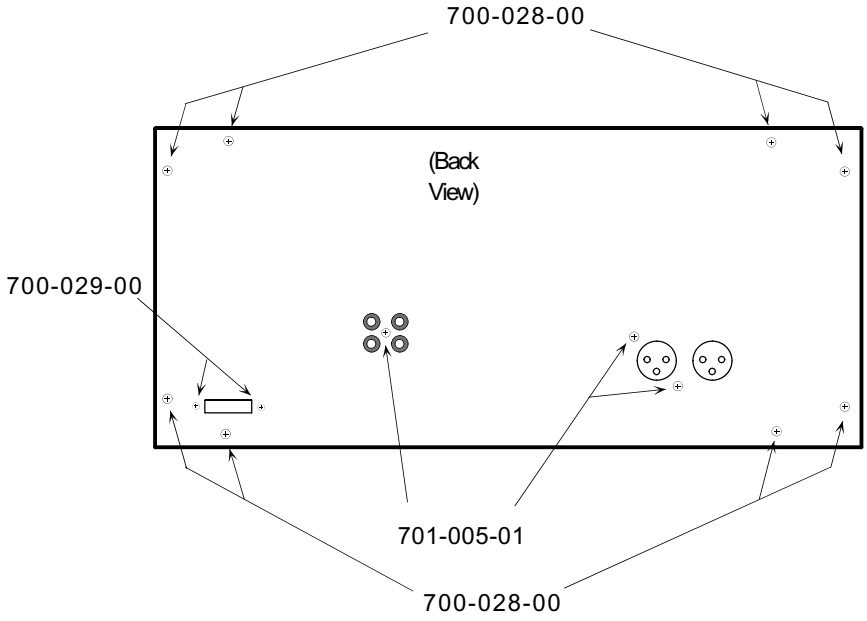
Power Switch
500-013-00

IEC Recept. w/fuse holder 400-009-00
110V fuse 510-001-00
220V fuse 510-002-00
100V fuse 510-001-00

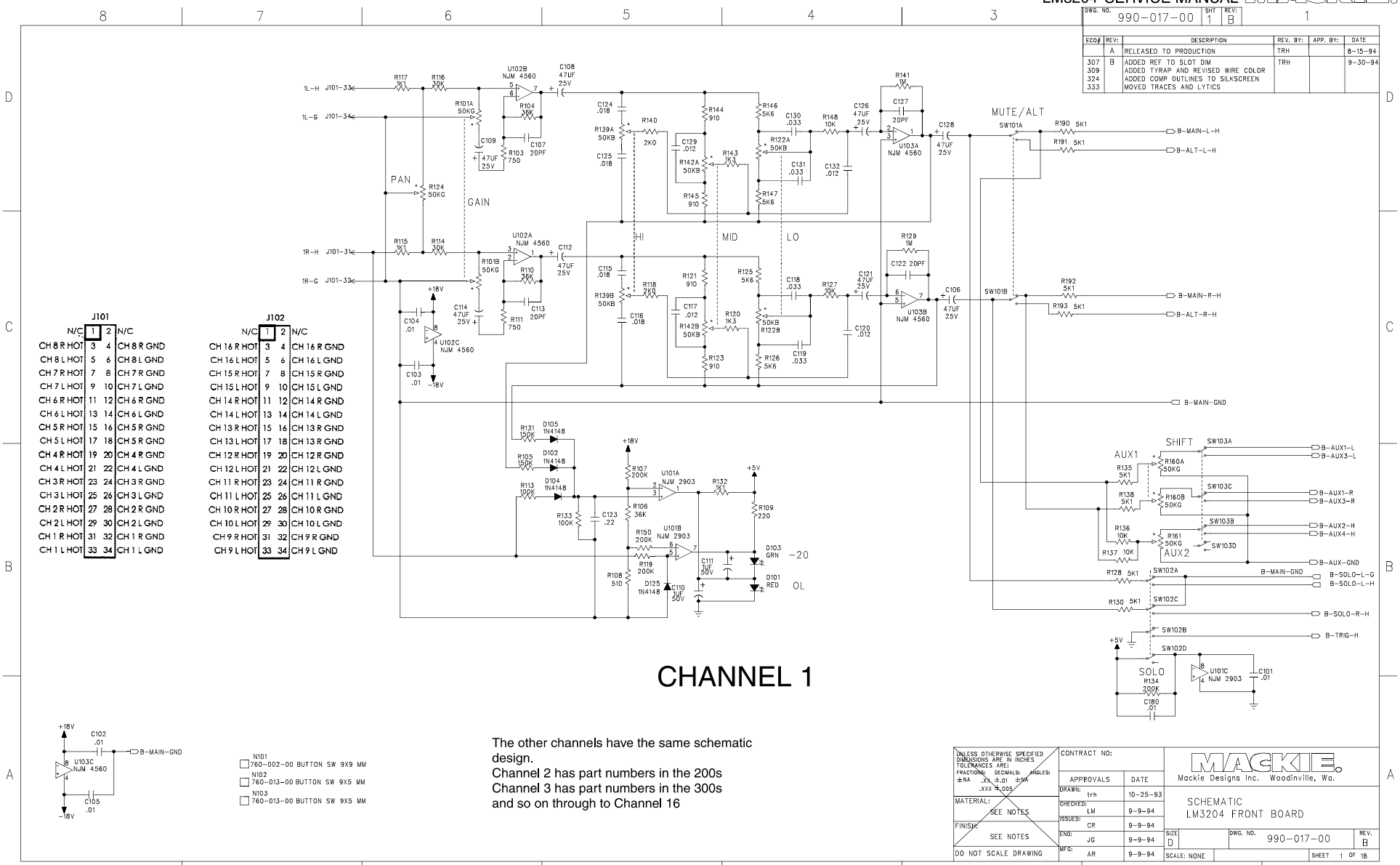
05/99

QUICK SCREWS





Version 1.0



The other channels have the same schematic design.
Channel 2 has part numbers in the 200s
Channel 3 has part numbers in the 300s
and so on through to Channel 16

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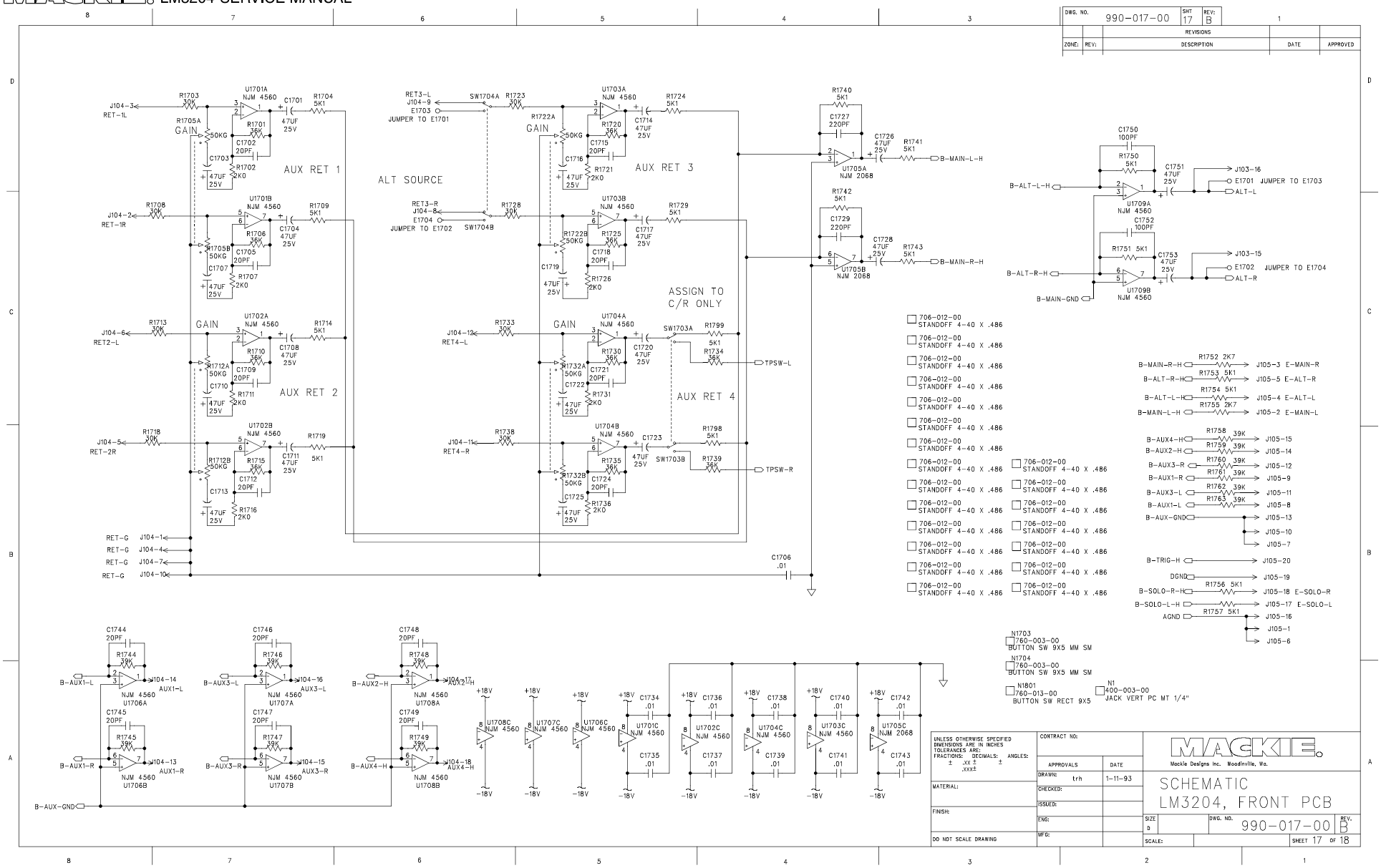
This contains all the boards used on the LM3204. This may help if you ever need to print out all the boards at once.



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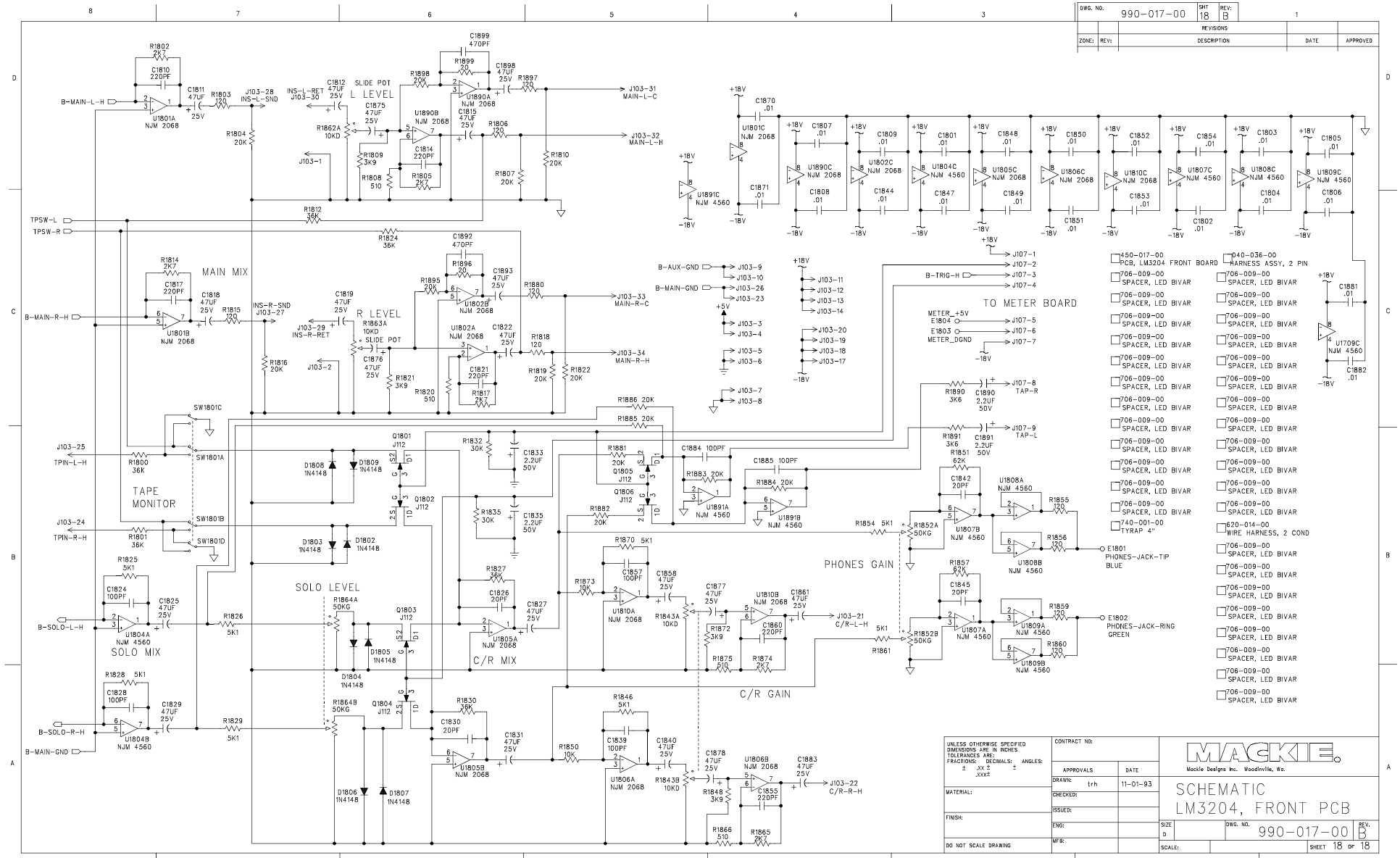

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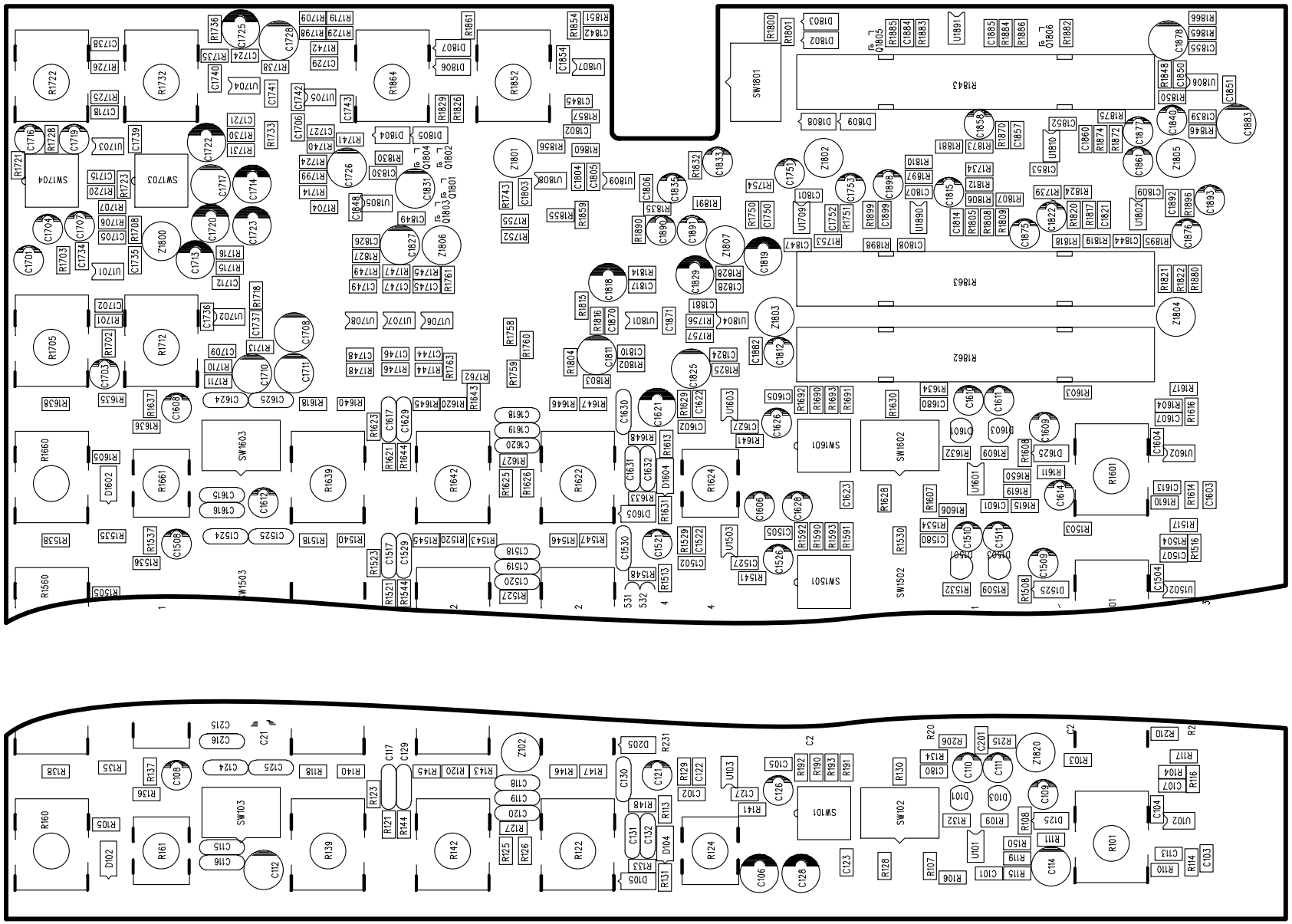
MASTER SECTION

CH 16

CH 15

CH 2

CH 1



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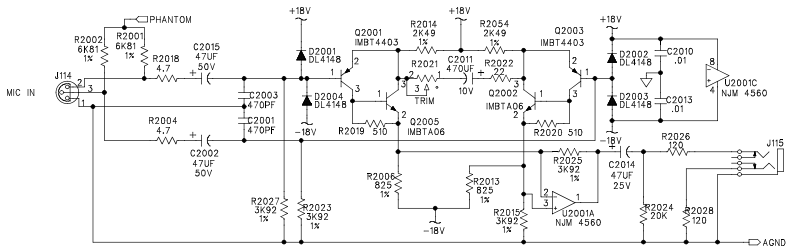
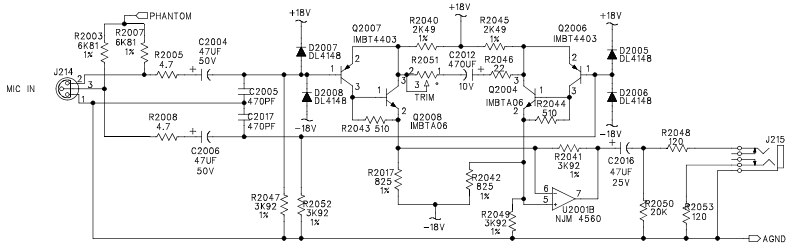
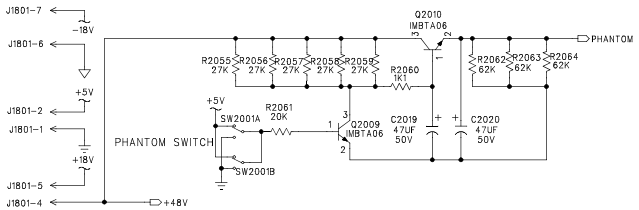
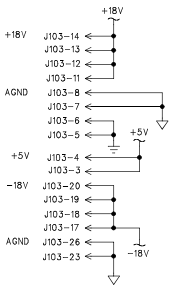
DWG. NO. 990-018-00 | SHT 1 | REV: C

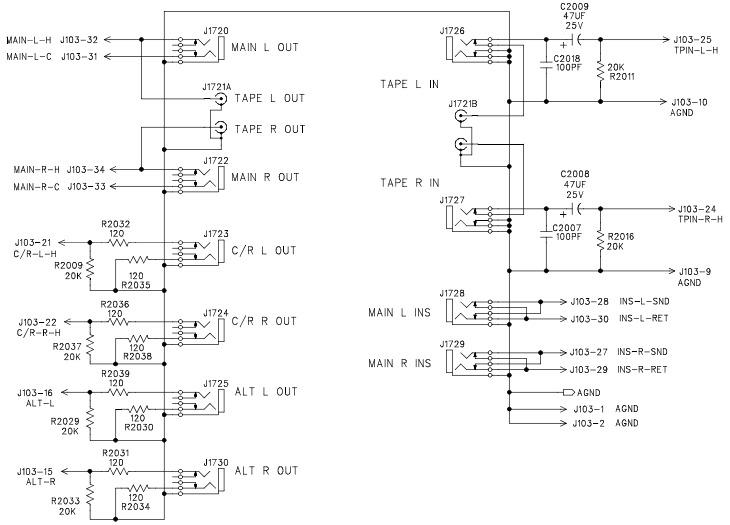
ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	A	RELEASED TO PRODUCTION	TRH		8-12-94
307 308 324 334	B	ADDED REF TO DIM R6,R16 WERE 120 ADDED COMP OUTLINES TO SILKSCREEN MOVED STANDOFFS	TRH		10-3-94
631 688 716 726 738 934	C	CONSOLIDATE SIMILAR PARTS ENCREASED TOOLING HOLE SIZE CHG TYPE OF FIDUCIAL CHG FIXTURE STDOFF HOLE SIZE TO .089 CHG TO SMOOTHER TAPER POT CHG BLK TO BLU JACKS	DD		











- 760-015-00 EXTENDER, SWITCH BUTTON
- 760-003-00 BUTTON SW 9X5 MM
- 040-037-00 CABLE ASSY, 3204 POWER
- 450-018-00 PCB, LM3204 REAR BOARD

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ±NA .XX ±.01 ±NA .XXX ±.005	CONTRACT NO:	MACKIE. Mackie Designs Inc. Woodinville, Wa.
	APPROVALS / DATE	
MATERIAL: SEE NOTES	DRAWN: trh 11-09-93	SCHEMATIC LM3204, REAR PCB
	CHECKED: LM 9-9-94	
FINISH: SEE NOTES	ISSUED: CR 9-9-94	
	ENG: JG 9-9-94	SIZE: D DWG. NO. 990-018-00 REV. C
DO NOT SCALE DRAWING	MFG: AR 9-9-94	SCALE: NONE SHEET 1 OF 5

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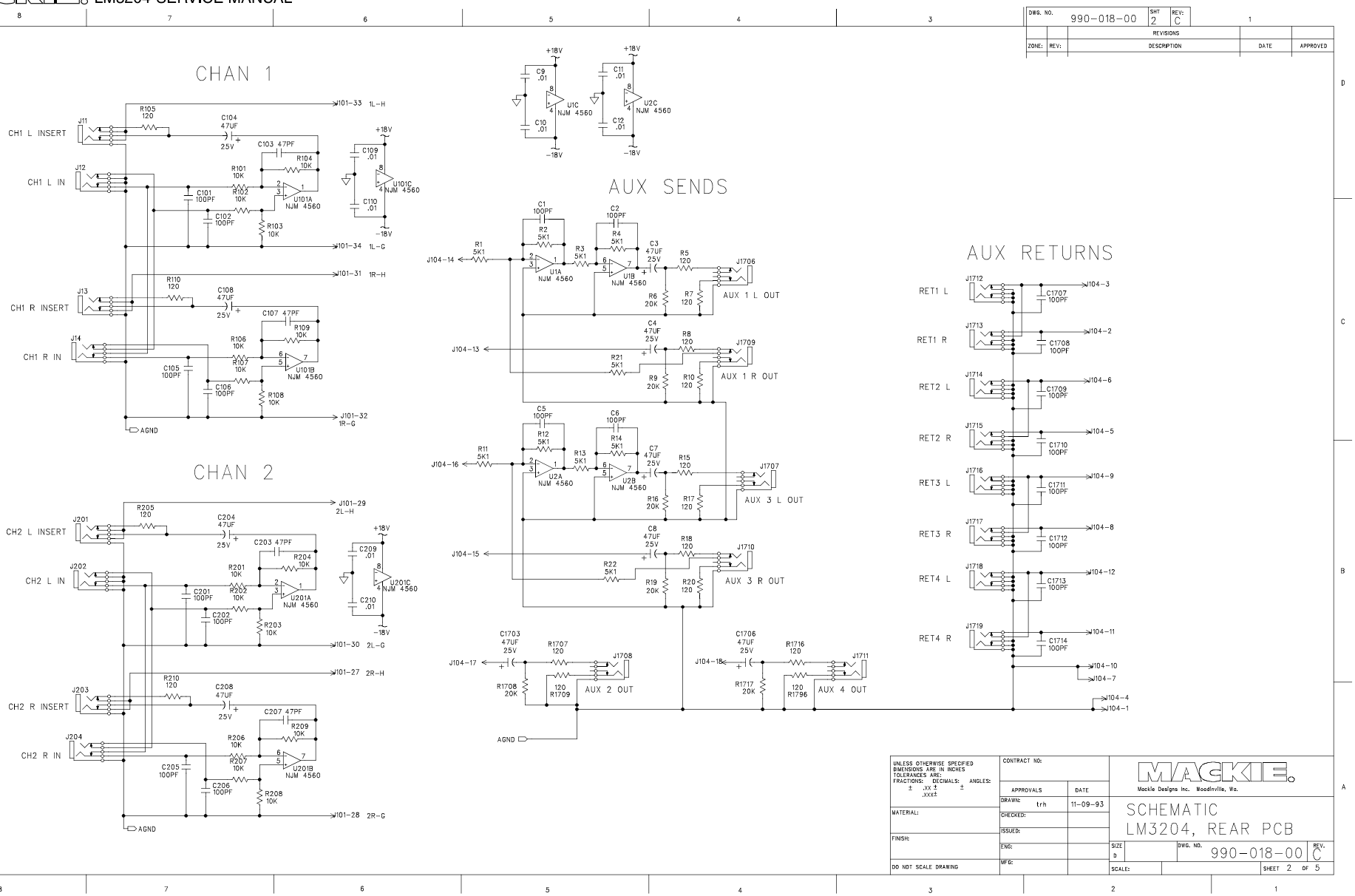

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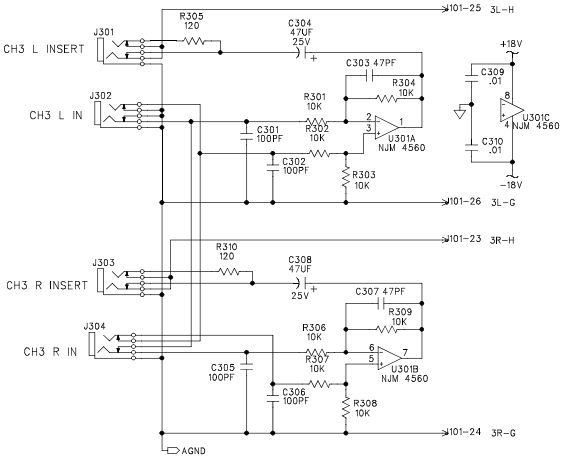
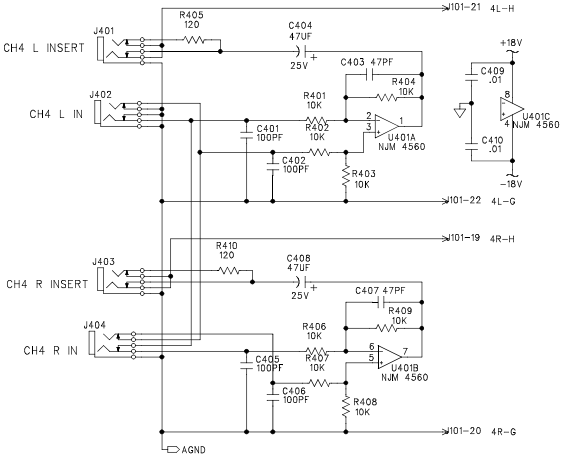
DWG. NO.	SHT	REV:
990-018-00	3	C

ZONE:	REV:	REVISIONS DESCRIPTION	DATE	APPROVED

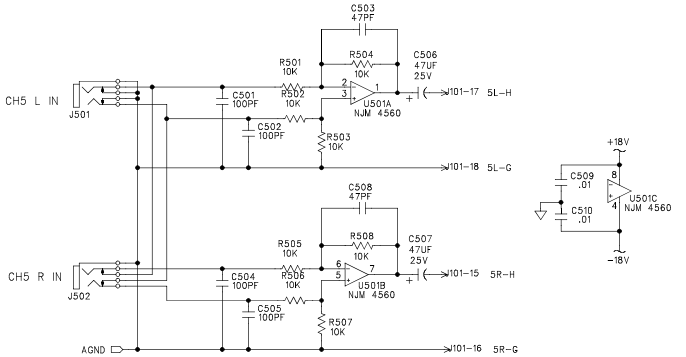
CHAN 3



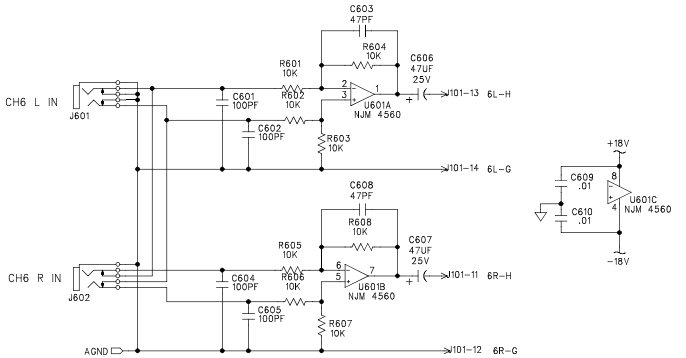
CHAN 4



CHAN 5



CHAN 6



CH 7 to 16 are not shown, but they have the same schematic.
See overleaf for the connector pinouts and the printed circuit board.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ± .XX ± .XXX± ±	CONTRACT NO:	MACKIE. Mackie Designs Inc. Woodinville, Wa.
	APPROVALS / DATE	
MATERIAL:	DRAWN: trh 11-09-93	SCHEMATIC LM3204 REAR
FINISH:	CHECKED:	
DO NOT SCALE DRAWING	ISSUED:	SIZE D DWG. NO. 990-018-00 REV. C
	ENG:	SCALE: SHEET 3 OF 5
	MFG:	

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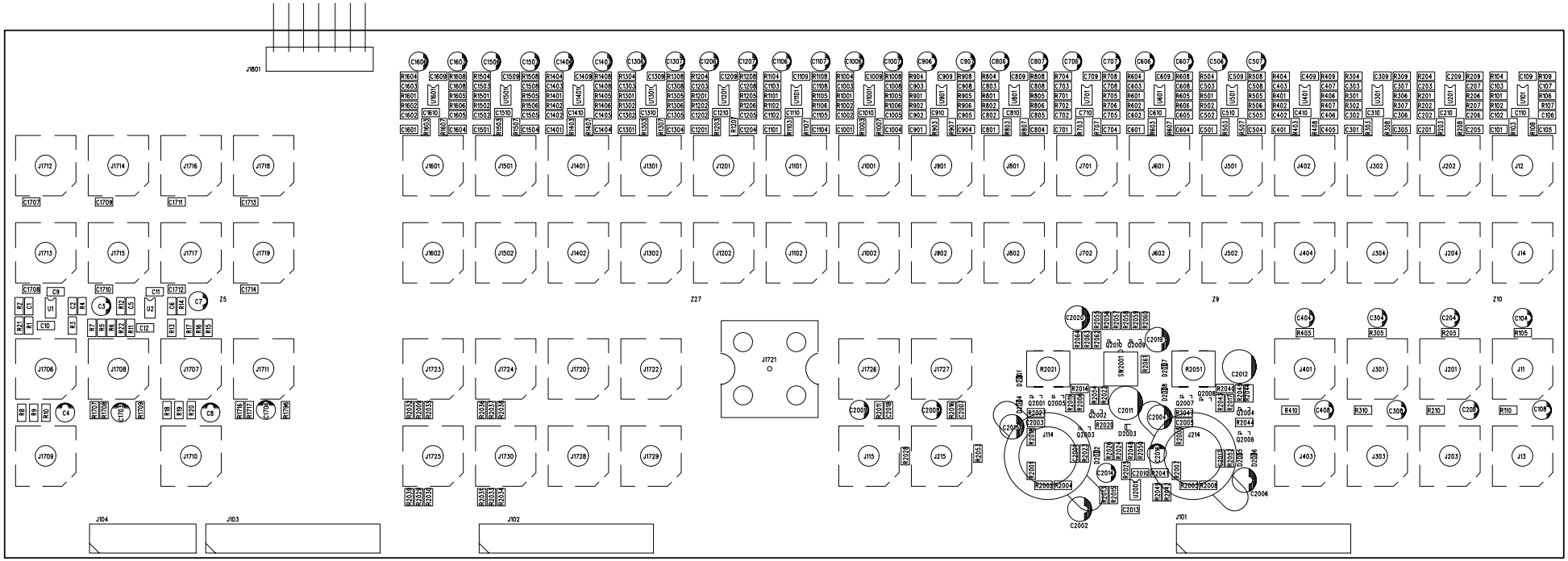

J101

N/C	1	2	N/C
CH 8 R HOT	3	4	CH 8 R GND
CH 8 L HOT	5	6	CH 8 L GND
CH 7 R HOT	7	8	CH 7 R GND
CH 7 L HOT	9	10	CH 7 L GND
CH 6 R HOT	11	12	CH 6 R GND
CH 6 L HOT	13	14	CH 6 L GND
CH 5 R HOT	15	16	CH 5 R GND
CH 5 L HOT	17	18	CH 5 R GND
CH 4 R HOT	19	20	CH 4 R GND
CH 4 L HOT	21	22	CH 4 L GND
CH 3 R HOT	23	24	CH 3 R GND
CH 3 L HOT	25	26	CH 3 L GND
CH 2 R HOT	27	28	CH 2 R GND
CH 2 L HOT	29	30	CH 2 L GND
CH 1 R HOT	31	32	CH 1 R GND
CH 1 L HOT	33	34	CH 1 L GND

J102

N/C	1	2	N/C
CH 16 R HOT	3	4	CH 16 R GND
CH 16 L HOT	5	6	CH 16 L GND
CH 15 R HOT	7	8	CH 15 R GND
CH 15 L HOT	9	10	CH 15 L GND
CH 14 R HOT	11	12	CH 14 R GND
CH 14 L HOT	13	14	CH 14 L GND
CH 13 R HOT	15	16	CH 13 R GND
CH 13 L HOT	17	18	CH 13 R GND
CH 12 R HOT	19	20	CH 12 R GND
CH 12 L HOT	21	22	CH 12 L GND
CH 11 R HOT	23	24	CH 11 R GND
CH 11 L HOT	25	26	CH 11 L GND
CH 10 R HOT	27	28	CH 10 R GND
CH 10 L HOT	29	30	CH 10 L GND
CH 9 R HOT	31	32	CH 9 R GND
CH 9 L HOT	33	34	CH 9 L GND

J103

AGND	1	2	AGND
+5V	3	4	+5V
GND	5	6	GND
GND	7	8	GND
AGND	9	10	AGND
+16V	11	12	+16V
+16V	13	14	+16V
ALT R OUT	15	16	ALT L OUT
-18V	17	18	-18V
-18V	19	20	-18V
C/R L OUT	21	22	C/R R OUT
AGND	23	24	TAPE IN R
TAPE IN L	25	26	AGND
R INS SEND	27	28	L INS SEND
R INS RTN	29	30	L INS RTN
L MAIN OUT -	31	32	L MAIN OUT +
R MAIN OUT -	33	34	R MAIN OUT +

J104

AGND	1	2	AUX RTN 1 R
AUX RTN 1 L	3	4	AGND
AUX RTN 2 R	5	6	AUX RTN 2 L
AGND	7	8	AUX RTN 3 R
AUX RTN 3 L	9	10	AGND
AUX RTN 4 R	11	12	AUX RTN 4 L
AUX SEND 1 R	13	14	AUX SEND 1 L
AUX SEND 3 R	15	16	AUX SEND 3 L
AUX 2 SEND	17	18	AUX 4 SEND
N/C	19	20	N/C

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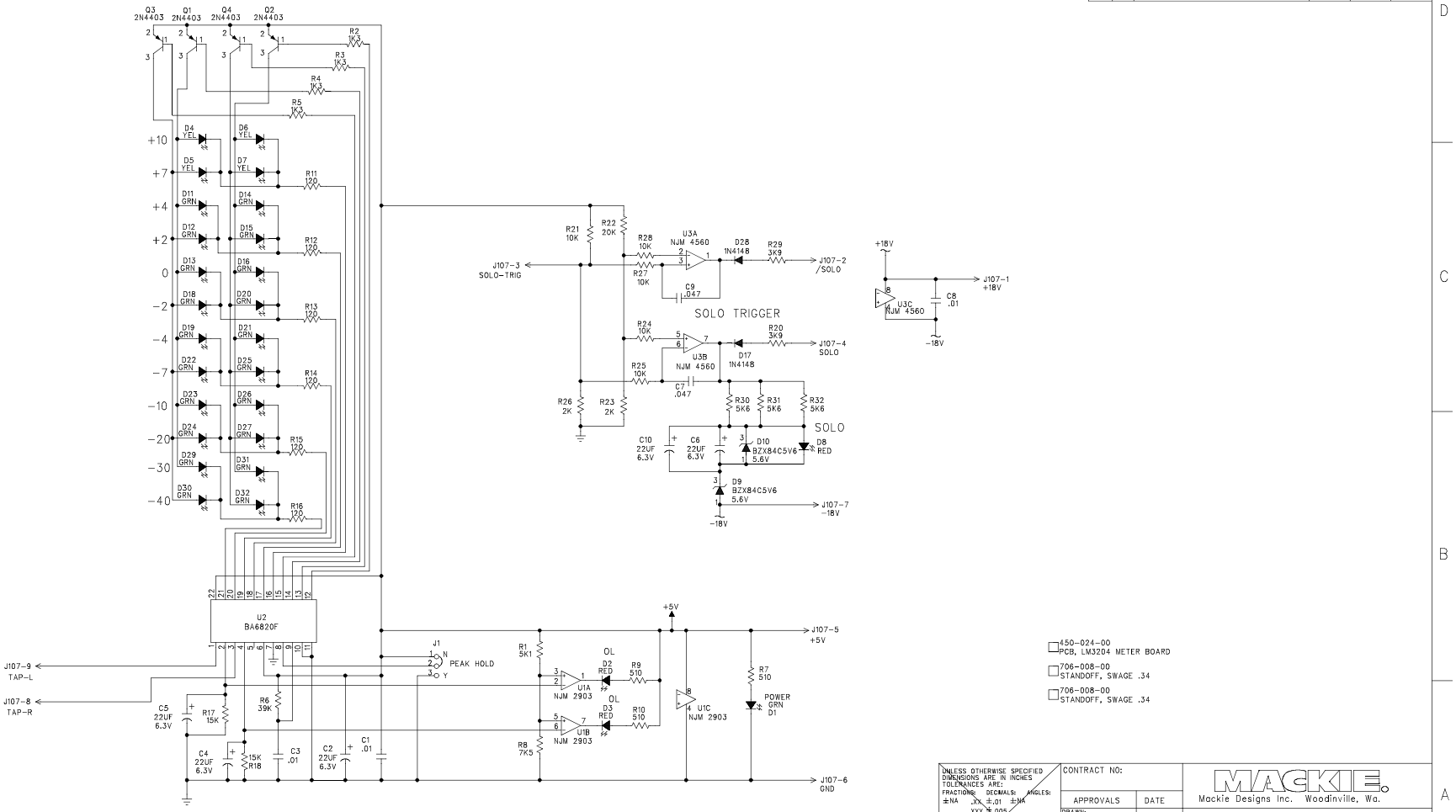

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	A	RELEASE TO PRODUCTION	TRH		8-12-94
307 688 716 932	B	ADD REF TO SLOT DIM CHG TOOLING HOLE FROM .128 TO .130 CHG TYPE OF FIDUCIAL CHG PART# OF D9 & D10	DD		

DWG. NO. 990-024-00 SHT 1 REV: B

450-024-00 PCB, LM3204 METER BOARD
706-008-00 STANDOFF, SWAGE .34
706-008-00 STANDOFF, SWAGE .34

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 ±NA .XXX ±.005 ANGLES: ±NA
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

CONTRACT NO:

APPROVALS	DATE
DRAWN: trh	11-01-93
CHECKED:	
ISSUED:	
ENG:	
MFG:	

MACKIE. Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC
LM3204 METER

SIZE D | DWG. NO. 990-024-00 | REV. B
SCALE: NONE | SHEET 1 OF 1

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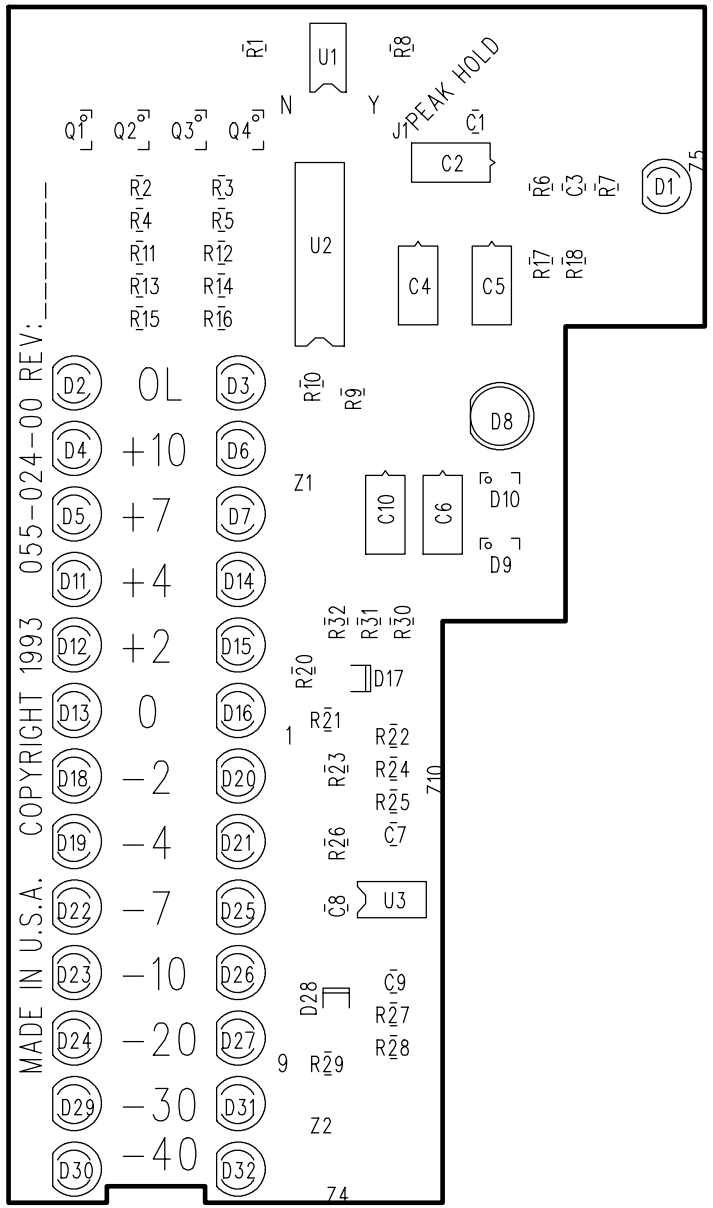

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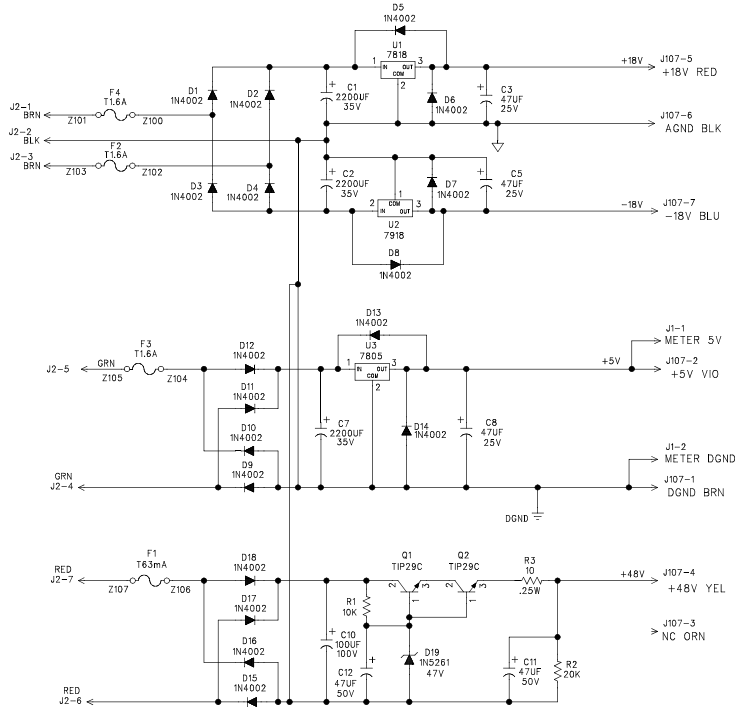
DWG. NO.	SHT	REV:
990-025-00	1	B

REV:	ECO#	DESCRIPTION	REV. BY:	APP. BY:	DATE
A		RELEASED TO PRODUCTION	TRH		8-10-94
B	326 407 607 688 895	MOVE CAPS FOR HOT MELT PHANTOM POWER ZENER TO 47V 2200/25V CAPS TO 35V TOOLING HOLES FROM .128 TO .130 ADD TIP29C FOR SAFETY	KR		3-6-96



- ☐ 450-025-00 PCB, LM3204 POWER SUPPLY
- ☐ 410-002-00 SILPAD
- ☐ 410-002-00 SILPAD
- ☐ 410-002-00 SILPAD
- ☐ 550-126-00 CLAMP
- ☐ 550-123-00 HEATSINK BRACKET
- ☐ 700-023-00 SCREW, 6-32 X .50
- ☐ 700-023-00 SCREW, 6-32 X .50

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 ±NA .XXX ±.005 ANGLES: ±NA

MATERIAL: SEE NOTES

FINISH: SEE NOTES

DO NOT SCALE DRAWING

CONTRACT NO:

APPROVALS		DATE
DRAWN:	trh	6-15-94
CHECKED:	LM	9-9-94
ISSUED:	CR	9-9-94
ENG:	JGG	9-9-94
MFG:	AR	9-9-94

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC
LM3204 POWER SUPPLY

SIZE D | DWG. NO. 990-025-00 | REV. B

SCALE: NONE | SHEET 1 OF 1

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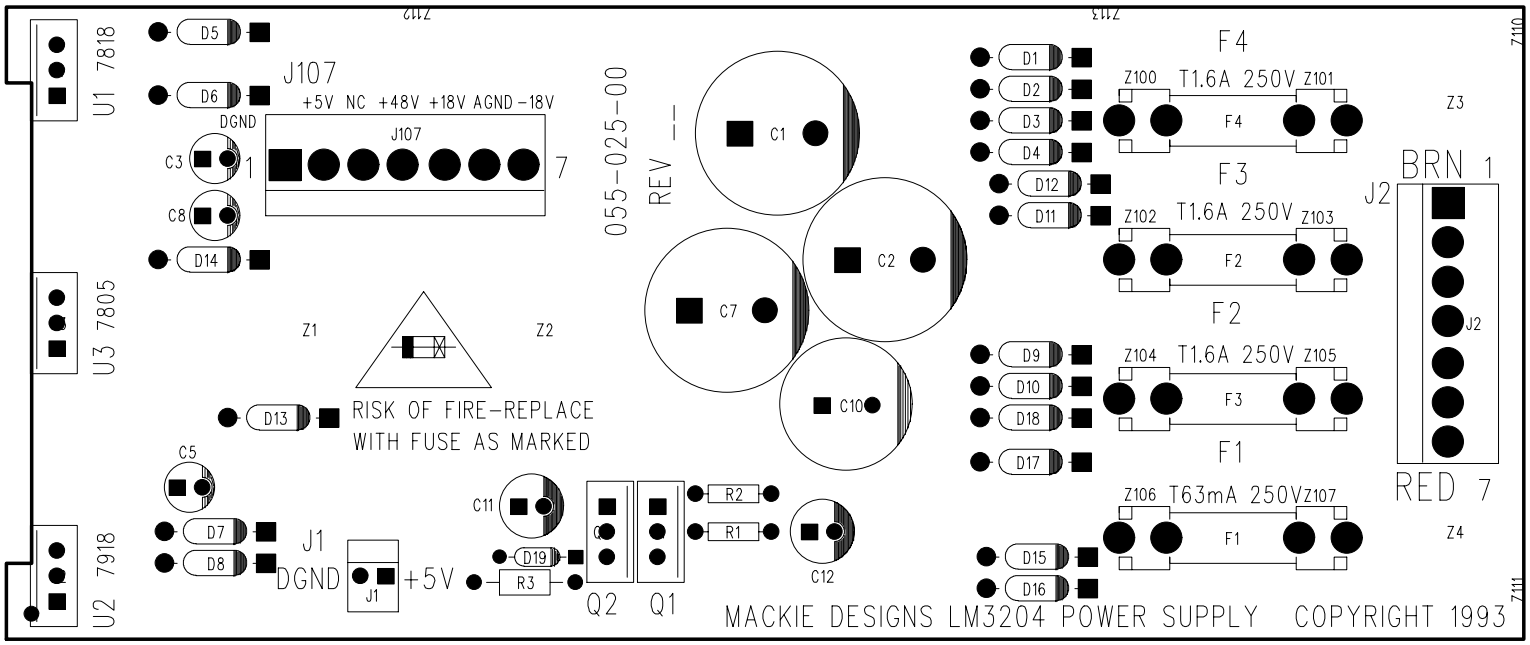

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